U.S. Department of Transportation
Federal Aviation Administration

Advisory Circular

Subject: OPERATIONAL SAFETY ON AIRPORTS DURING CONSTRUCTION
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Change:

1. PURPOSE. This advisory circular (AC) sets forth guidelines concerning the operational safety on airports during construction, to assist airport operators in complying with Part 139, Certification and Operation: Land Airports Serving Certain Air Carriers, of the Federal Aviation Regulations (FAR), and with the requirements of Federally-funded construction projects. Construction activity is defined as the presence and movement of personnel, equipment, and materials in any location which could infringe upon the movement of aircraft. For noncertificated airports and airports with no grant agreements, application of these provisions will help maintain the desired level of operational safety during periods of construction.

2. CANCELLATION. AC 150/5370-2B, Operational Safety on Airports With Emphasis on Safety During Construction, dated October 9, 1981, is canceled.

3. RELATED READING MATERIAL. All references cited herein are available for inspection in any Federal Aviation Administration (FAA) regional office.

a. The Federal Aviation Regulations are sold by the Superintendent of Documents (AC 00-44, Status of Federal Aviation Regulations, current edition, contains a price list and ordering instructions).

b. AC 150/5370-10, Standards for Specifying Construction of Airports, is also sold by the Superintendent of Documents (AC 00-2, Advisory Circular Checklist, current edition, contains ordering instructions).

4. BACKGROUND. Various AC's which detail all major elements of safe, efficient airport design and construction are available. However, operational safety on airports may be degraded by construction hazards or marginal conditions that develop after an airport has been opened or approved for operation. This AC addresses that problem. NOTE: Airports which have received Federal assistance (grants, real or personal property) and airports certificated under FAR Part 139 have mandatory requirements related to this subject.

construction of a new airport; the construction, realigning, altering, activating, or abandoning of a runway, landing strip, or associated taxiway; and the deactivating or abandoning of an entire airport. Formal notification is made by submitting FAA Form 7480-1, Notice of Landing Area Proposal, to the nearest FAA district office or FAA regional office. (See AC 70-2, Airspace Utilization Considerations in the Proposed Construction, Alteration, Activiation and Deactivation of Airports, current edition.) Also, any person proposing any kind of construction or alteration of objects that affect navigable airspace, as defined in FAR Part 77, Objects Affecting Navigable Airspace, is required to notify the FAA. FAA Form 7460-1, Notice of Proposed Construction or Alteration, should be used for this purpose. (See AC 70/7460-2, Proposed Construction or Alteration of Objects That May Affect the Navigable Airspace, current edition.)

b. Work Scheduling and Accomplishment. Predesign, preconstruction, and prebid conferences provide excellent opportunities to introduce the subject of airport operational safety during construction. All parties involved, including the sponsor's engineer and contractors, should integrate operational safety requirements into their planning and work schedules as early as practical. Also, responsibilities should be clearly established for continuous monitoring and compliance with the requirements assigned and for vigilance to detect areas needing attention due to oversight or altered construction activity. When construction is being planned on FAR Part 139 certificated airports, the responsible airport safety (certification) inspector should be directly involved at all stages, from predesign through final inspection.

c. Safety Considerations. The following is a partial list of safety considerations which experience indicates will need attention during airport construction.

(1) Minimum disruption of standard operating procedures for aeronautical activity.

(2) Clear routes from firefighting and rescue stations to active airport operations areas and safety areas.

(3) Chain of notification and authority to change safety-oriented aspects of the construction plan.

(4) Initiation, currency, and cancellation of Notice to Airmen (NOTAM's).

(5) Suspension or restriction of aircraft activity on airport operations areas.

(6) Threshold displacement and appropriate temporary lighting and marking.

(7) Installation and maintenance of temporary lighting and marking for closed or diverted aircraft routes on airport operations areas.

(8) Revised vehicular control procedures or additional equipment and manpower.

(9) Marking/lighting of construction equipment.

(32) Smoke, steam, and vapor controls.

(33) Notify crash/fire/rescue personnel when working on water lines.

(34) Provide traffic directors/wing walkers, etc., as needed to assure clearance in construction areas.

d. Guidelines for Proximity of Construction Activity to Airport Operations Areas. The guidelines contained in appendix 1 are for use in the preparation of plans and specifications when construction activities are to be conducted in locations which may interfere with aircraft operations. They should be adapted to the needs of a particular project and should not be incorporated verbatim into project specifications.

7. EXAMPLES OF HAZARDOUS AND MARGINAL CONDITIONS. Analyses of past accidents and incidents have identified many contributory hazards and conditions. A representative list follows:

a. Excavation adjacent to runways, taxiways, and aprons.

b. Mounds or stockpiles of earth, construction material, temporary structures, and other obstacles in proximity to airport operations areas and approach zones.

c. Runway surfacing projects resulting in excessive lips greater than 1 inch (2.54 cm) for runways and 3 inches (7.62 cm) for edges between old and new surfaces at runway edges and ends.

d. Heavy equipment, stationary or mobile, operating or idle near airport operations areas or in safety areas.

e. Proximity of equipment or material which may degrade radiated signals or impair monitoring of navigational aids.

f. Tall but relatively low visibility units such as cranes, drills, and the like in critical areas such as safety areas and approach zones.

g. Improper or malfunctioning lights or unlighted airport hazards.

h. Holes, obstacles, loose pavement, trash, and other debris on or near airport operations areas.

i. Failure to maintain fencing during construction to deter human and animal intrusions into the airport operation areas.

j. Open trenches along side pavement.

k. Improper marking or lighting of runways, taxiways, and displaced thresholds.

l. Attractions for birds such as trash, grass seeding, or ponded water on or near airports.

d. Movement. The control of vehicular activity on airport operations areas is of the highest importance. Airport management is responsible for developing procedures, procuring equipment, and providing training regarding vehicle operations to ensure aircraft safety during construction. This requires coordination with airport users and air traffic control. Consideration should be given to the use of two-way radio, signal lights, traffic signs, flagmen, escorts, or other means suitable for the particular airport. The selection of a frequency for two-way radio communications between construction contractor vehicles and the air traffic control (ATC) tower must be coordinated with the ATC tower chief. At nontower airports, two-way radio control between contractor vehicles and fixed-base operators or other airport users should avoid frequencies used by aircraft. It should be remembered that even with the most sophisticated procedures and equipment, systematic training of vehicle operators is necessary to achieve safety. Special consideration should be given to training intermittent operators, such as construction workers, even if escort service is being provided.

10. INSPECTION. Frequent inspections should be made by the airport operator or a representative during critical phases of the work to ensure that the contractor is following the prescribed safety procedures and that there is an effective litter control program.

11. FAA SAFETY RESPONSIBILITIES. FAA Airports engineers and certification inspectors have specific responsibilities regarding operational safety on certificated airports before and during periods of construction activity. Their particular area of concern will be directed towards construction within safety areas, and they will be involved in the following functions:

a. Review of plans to determine limits of work and possible safety problem areas.

b. Give special attention to the development of the safety plan which is a part of the plans and specifications.

c. Advise FAA elements such as regional Flight Standards, Air Traffic, and Airway Facilities of the construction activities and the safety plan.

d. Ensure that users of the facilities have ample warning of the proposed construction so that they may make advanced plans to change their operations.

e. FAA Airports engineers and certification inspectors should participate in the predesign and preconstruction conferences if the project involves a complex safety plan. Also, they should participate in construction inspections and in the inspection of the finished work to determine that there are no safety violations to FAR Part 139.

Leonard E. Mudd

LEONARD E. MUDD
Director, Office of Airport Standards

APPENDIX 1. SPECIAL SAFETY REQUIREMENTS DURING CONSTRUCTION

1. RUNWAY ENDS. Construction equipment normally should not penetrate the 20:1 approach surface.

2. RUNWAY EDGES. Construction activities normally should not be permitted within 200 feet of the runway centerline. However, construction may be permitted within 200 feet of the runway centerline on a case-by-case basis with approval of the airport operator, the FAA and the users.

3. TAXIWAYS AND APRONS. Normally, construction activity set-back lines should be located at a distance of 25 feet plus one-half the wingspan of the largest predominant aircraft from the centerline of an active taxiway or apron. However, construction activity may be permitted up to the taxiway and aprons in use provided that the activity is first coordinated with the airport operator, the FAA and the users; NOTAM's are issued; marking and lighting provisions are implemented; and it is determined the height of equipment and materials is safely below any part of the aircraft using the airport operations areas which might overhang those areas. An occasional passage of an aircraft with wingspan greater than 165 feet should be dealt with on a case-by-case basis.

4. EXCAVATION AND TRENCHES.

a. Runways. Excavations and open trenches may be permitted up to 200 feet from the centerline of an active runway, provided they are adequately signed, lighted and marked. In addition, excavation and open trenches may be permitted within 200 feet of the runway centerline on a case-by-case basis, i.e., cable trenches, pavement tie-ins, etc., with the approval of the airport operator, the FAA and the users.

b. Taxiways and Aprons. Excavation and open trenches may be permitted up to the edge of structural taxiway and apron pavements provided the drop-off is adequately signed, lighted and marked.

5. STOCKPILED MATERIAL. Extensive stockpiled materials should not be permitted within the construction activity areas defined in the preceding four sections.

6. MAXIMUM EQUIPMENT HEIGHT. Notice of proposed construction shall be submitted to the appropriate Airports district office for review prior to the placement of construction equipment on airports. The guiding criteria involving FAR Part 139 certificated airports and grant agreement airports is that all construction plans and specifications require direct coordination with the appropriate Airports district, field, or regional office. In addition, airports should file FAA Form 7460-1 when equipment is expected to penetrate any of the surfaces defined above in paragraphs 1, 2, and 3. Airport operators are reminded that FAR Part 157 requires prior notice to construct, realign, alter, or activate any runway/landing area or associated taxiway for any project which is non-Federally funded.

7. PROXIMITY OF CONSTRUCTION ACTIVITY TO NAVIGATIONAL AIDS. Construction activity in the vicinity of navigational aids requires special consideration. The effect of the activity and its permissible distance and direction from the aid must be evaluated in each instance. A coordinated evaluation by the airport operator and the

material such as fabric or plywood), and they are required only at runway ends. The crosses should be located on top of the runway numerals. For temporary marking, the dimensions of the crosses may be reduced to permit use of standard sheets of 4-by-8-foot (1.22 by 2.44 m) plywood. Temporarily closed taxiways are usually treated as an unusable area as explained in paragraph 10d.

c. Closed Airports. When all runways are closed temporarily, the runways are marked as in paragraph 10b, and the airport beacon is turned off. When all runways are closed permanently, the runways are marked as in paragraph 10a, the airport beacon is disconnected, and a cross is placed in the segmented circle or at central location if no segmented circle exists.

d. Hazardous Areas. Hazardous areas, in which no part of an aircraft may enter, are indicated by use of barricades with alternate orange and white markings. The barricades are supplemented with orange flags at least 20 by 20 inches (50 by 50 cm) square and made and installed so that they are always in the extended position and properly oriented. For nighttime use, the barricades are supplemented with flashing yellow lights. The intensity of the lights and spacing for barricades, flags, and lights must be such to delineate adequately the hazardous area.

e. Notices to Airmen (NOTAM's). The airport operator should provide information on closed or hazardous conditons to the local air traffic control facility (control tower, approach control, center, flight service station) so that a NOTAM can be issued.

f. Stabilized Areas. Holding bays, aprons, and taxiways are sometimes provided with shoulder stabilization to prevent blast and water erosion. This stabilization may have the appearance of a full strength pavement but is not intended for aircraft use. Usually the taxiway edge marking will define this area, but conditions may exist such as stabilized islands or taxiway curves where confusion may exist as to which side of the edge stripe is the full strength pavement. Where such a condition exists, the stabilized area should be marked with 3-foot (1 m) stripes perpendicular to the edge stripes. On straight sections, the marks should be placed at a maximum of 100-foot (30 m) spacing. On curves, the marks should be placed a maximum of 50 feet (15 m) apart between the curve tangents. The stripes should be extended to 5 feet (1.5 m) from the edge of stabilized area or to 25 feet (7.5 m) in length, whichever is less.

g. Runway Shoulder Marking. Usually the runway side stripes will indicate the edges of the full strength pavement. However, conditions may exist, such as exceptionally wide runways, where there is a need to indicate the area not intended for use by aircraft. In such cases, chevrons should be used.

11. TEMPORARY RUNWAY THRESHOLD DISPLACEMENTS. Identification of temporary runway threshold displacements should be located outboard of the runway surface. These could include outboard lights, Runway End Identification Lights (REILS), and markings. The extent of the marking and lighting should be directly related to the duration of the displacement as well as the type and level of aircraft activity.